SOURCES OF HIGH-CHLORIDE WATER TO WELLS IN A COASTAL SOUTHERN CALIFORNIA AQUIFER

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The U.S. Geological Survey currently is assessing the regional ground-water resources in the San Diego area. The regional assessment was designed as an integrated set of five drainage-basin investigations in order to most effectively gather detailed information about the largely unresearched and areally extensive San Diego Formation. The initial part of that assessment included the installation of multiple-depth monitoring wells to identify sources of high-chloride ground water to wells in the San Diego, Sweetwater, and Tijuana River drainage basins. Data collected from these multi-level well sites include geologic and geophysical logs, cores from selected depths, water-quality samples analyzed for a broad range of constituents including major and minor ions, trace elements, volatile organics, pesticides, wastewater indicators, stable isotope, and water levels. The preliminary evaluation of the water-quality data suggests that the dissolution of soluble salts characteristic of the underlying marine deposits is the predominant source of high-Cl^- ground water in these drainage basins; however, seawater intrusion could become a predominant source of high Cl- water to the San Diego Formation and overlying alluvial deposits in the future.